

function `display_area( )` to compute and display the area for the shapes. Make `display_area( )` as a virtual function and redefine in the derived classes to suit their requirement. Using these three classes, design a program that will accept dimensions of a triangle or a rectangle interactively and display the area.

20. Explain the various stream classes and I/O functions associated with it.
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APRIL/MAY 2024

**23UCS11/23USC11 — OBJECT ORIENTED  
PROGRAMMING CONCEPTS USING C++**

Time : Three hours

Maximum : 75 marks

**SECTION A — (10 × 2 = 20 marks)**

Answer ALL the questions.

1. List out the characteristics of Object Oriented Programming.
2. What is Implicit Type Conversion?
3. What is an inline function?
4. List some special properties of constructor functions.
5. List out the operators that cannot be overloaded using Friend function.
6. Define abstract class.
7. What is meant by pointer and null pointer?
8. What is pure virtual function?
9. Write a note on File.
10. What is exception handling? How it is classified?



SECTION B — (5 × 5 = 25 marks)

Answer ALL the questions.

11. (a) Discuss the classifications of data types under various categories.

Or

- (b) Demonstrate the usage of switch-case statement.

12. (a) What are the different ways to define member functions of a class? Explain.

Or

- (b) Explain friend function with example and list sum of the special properties of friend function.

13. (a) Show the use of multiple inheritances with the help of proper programming example.

Or

- (b) Explain the importance of virtual base class with an example program.

14. (a) Explain about the callback functions.

Or

- (b) List out the rules for using virtual functions.

15. (a) Discuss the various functions available for file manipulations.

Or

- (b) How exceptions are handled inside a program? Explain.

SECTION C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Summarize the mathematical functions available in C++.

17. Explain the different constructor types available in C++.

18. Define a class called "Time" with its data members Hours, Minutes, and Seconds. Write a C++ program to read two time values and add it by overloading arithmetic plus (+) operator.

19. Create a base class called "shape". Use this class to store two double type values that could be used to compute the area of different shapes. Derive two specific classes called "triangle" and "rectangle" from the base shape. Add to the base class, a member function get\_data( ) to initialize base class data members and another member